

Intonation models and their functions in Hadith Qudsi "Factory - Phonology"

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Abstract—This study investigates intonational patterns and their grammatical, semantic, and expressive functions in selected Hadith Qudsi utterances. Combining descriptive analysis with an experimental acoustic approach, it examines nine recorded examples representing interrogative, conditional, vocative, and imperative constructions. The recordings were analyzed using Praat software to trace fundamental frequency (F0) movements and identify rising, falling, and complex pitch contours. Findings indicate that intonation varies according to sentence structure and communicative purpose. Interrogative utterances display rising, falling, or falling-rising patterns, while conditional constructions generally move toward a final fall signaling completion. Vocative and imperative forms exhibit more variable contours that reinforce emphasis, address, and directive force. The analysis also shows how prosodic cues contribute to interpreting implied questions and distinguishing literal from contextual meanings. Overall, the study highlights intonation as an essential phonological resource for clarifying syntactic relationships, conveying expressive intentions, and reducing ambiguity in Classical Arabic religious discourse and spoken communication.

Keywords—*Intonation; Hadith Qudsi; Acoustic Analysis; Phonological Functions; Praat.*

I. INTRODUCTION

Qudsi Hadiths are considered among the most important sources documenting the teachings of Islam and its spiritual and ethical orientations. One of the significant aspects in the study of these Hadiths is the intonational patterns employed within them, as they constitute a fundamental basis for understanding their meanings and applications. Based on this premise, the present study aims to identify intonational contours and their functions in Arabic sentences through Qudsi Hadiths from both acoustic and phonological perspectives, by addressing the following research problem:

II. WHAT IS INTONATION, AND WHAT IS THE NATURE OF THE INTONATIONAL CONTOUR OF ARABIC SENTENCES AND THEIR GRAMMATICAL SIGNIFICANCE?

Accordingly, the study necessitated the adoption of two approaches, as they are deemed the most appropriate for addressing the subject matter. The first is the experimental method, whose foundations are manifested through formulating the study hypotheses and subsequently testing them empirically, while carefully and objectively observing the results without bias, with the aid of the necessary instruments and technical devices, and repeating the

experiment when necessary in order to verify the obtained findings. The study also draws upon the descriptive method and employs analytical mechanisms derived from other related approaches, using them to describe, analyze, present, and, where possible, discuss the investigated phenomena.

In this “laboratory-based” study, we rely on the software Praat, which specializes in the analysis and processing of speech signals, with reference to the program’s user manual. This software is distinguished by the high degree of scientific accuracy required for research of this nature, as its margin of error is extremely limited in comparison with traditional phonetic laboratories.

III. WE PRESENT BELOW THE SCIENTIFIC EXPERIMENTAL TOOLS ADOPTED IN THIS RESEARCH PAPER:

IV. TITLE OF THE EXPERIMENT: “TYPES OF INTONATIONAL CONTOURS.”

V. RESEARCH AND OBSERVATION WITH THE FORMULATION OF THE RESEARCH QUESTION BY DEFINING THE PROBLEM UNDER INVESTIGATION: “OBSERVING THE PHENOMENON OF INTONATION AND ITS VARIOUS TYPES.”

After examining a number of previous studies and reviewing their findings, we observed that the Arabic sentence, through its intonational variation, may convey declarative, interrogative, exclamatory, or alerting meanings. Thus, the rising tone is generally associated with interrogation, the falling tone with declaration, the falling-rising contour with probability or uncertainty, and the level tone with continuity.

Furthermore, through our survey of numerous studies—if not all of them—we identified only one study that addressed intonation from a physical perspective. This was an article entitled “Intonation in the Arabic Language: A Physical Perspective” by Reda Zellaqi, published in the journal *Linguistic Practices* at Mouloud Mammeri University of Tizi Ouzou in 2014. The study examined intonation physically on the basis of the activity of the vocal folds, which produce vibrations of varying frequencies that appear in the spectrogram in the form of contours known as the “fundamental frequency contour.” The higher the frequency value of the vocal-fold vibrations, the higher the pitch, and vice versa. The applied models in that study included declarative, prohibitive, interrogative, vocative, and exclamatory utterances.

From this standpoint, we sought to investigate the types of intonation in the Arabic sentence by observing them as variations in the level of the fundamental frequency (F0) through a speech corpus recorded by the researcher. The corpus consists of a set of sentences drawn from Qudsi Hadiths representing different semantic contexts. Accordingly, the research problem to be addressed can be formulated as follows: What are the types of intonational contours in Arabic sentences? Are they rising, falling, or level contours?

VI. HYPOTHESES:

BEFORE ENGAGING IN THE LABORATORY-BASED INVESTIGATION, WE PROPOSE THE FOLLOWING EXPECTED HYPOTHESIS:

VII. THERE ARE RISING TONES, FALLING TONES, LEVEL TONES, AND RISING-FALLING TONES, DEPENDING ON THE TYPE OF SENTENCE.

VIII. EXPERIMENTAL PROCEDURE:

FOLLOWING THE STAGES OF OBSERVATION AND HYPOTHESIS FORMULATION COMES THE PROCESS OF TESTING THE HYPOTHESIS AND VERIFYING ITS VALIDITY.

5. Field Study Procedures:

The study relies on the experimental method as well as the descriptive method, which provides an accurate description of the investigated phenomena through the collection of quantitative and qualitative data, making use of techniques of measurement, classification, and interpretation.

6. Place of the Study:

The study is conducted in a sound-insulated room in order to prevent any external noise or distortion from interfering with the audio recordings. The microphone was positioned at a distance of 30 cm to ensure recording quality in accordance with the audio recording standards adopted in Praat.

IX. STUDY SAMPLE:

X. A SELECTION OF MODELS FROM CLASSICAL ARABIC, WITH THE QUDSI HADITHS NARRATED BY MOHAMED METWALLY EL SHAARAWY SERVING AS THE PRIMARY CORPUS FOR ANALYSIS.:

XI. KAYFA A'ŪDUKA WA ANTA RABB AL-'ĀLAMĪN (MUTAWALLĪ, 2002, p. 1/59).

XII. HAL ANTA ḥAMILUHā BIMā FĪHā (MUTAWALLĪ, 2002, p. 1/267).

XIII. Mādhā QĀLA 'ABDĪ (MUTAWALLĪ, 2002, p. 2/281).

XIV. KUNTA TAẒUNNU ANNAKA MULĀQĪ YAWMAKA HĀDHā (MUTAWALLĪ, 2002, p. 1/221).

XV. QABAḌTUM WALADA 'ABDĪ (MUTAWALLĪ, 2002, p. 2/281).

XVI. MAN 'ādā LĪ WALIYYAN FAQAD āDHANTUHU BIAL-ḥARB (MUTAWALLĪ, 2002, p. 1/87).

XVII. Yā IBNA ĀDAM MARIDTA FA-LAM TA'UDNĪ (MUTAWALLĪ, 2002, p. 2/59).

XVIII. MURŪ BI-L-MA'RŪF WA-NHAW 'ANIL-MUNKAR (MUTAWALLĪ, 2002, p. 1/177).

XIX. IBNŪ LI-'ABDĪ BAYTAN FĪ AL-JANNAH (MUTAWALLĪ, 2002, p. 2/281).

XX. RESEARCH INSTRUMENTS:

XXI. CORPUS RECORDING:

XXII. THE CORPUS CONTAINS A SELECTION OF SAMPLES DRAWN FROM QUDSI HADITHS, WHICH WERE RECORDED BY THE RESEARCHER HERSELF.

XXIII. USE OF THE COMPUTER SOFTWARE PRAAT:

XXIV. FOR THE PURPOSES OF THIS STUDY, WE RELIED ON THE LABORATORY-BASED COMPUTER SOFTWARE PRAAT IN ORDER TO CONDUCT THE VARIOUS PHYSIOLOGICAL AND ACOUSTIC EXPERIMENTS REQUIRED FOR THE ANALYSIS.

XXV. INTONATION IN CLASSICAL AND MODERN LINGUISTIC THOUGHT

Intonation is a form of musical prosodic variation that contributes to the communicative process by revealing meanings and grammatical as well as contextual significations. It does not appear in writing, but it is realized in spoken language. Although the Arabic sentence may be structurally clarified through various linguistic markers and grammatical tools, the role of intonation in expressing the speaker's state in accordance with context and communicative situation remains undeniable.

This phenomenon has been addressed by both classical and modern scholars, who have examined its causes, types, and its reciprocal influence as both a shaping and shaped element within speech. In contemporary studies, this analysis has been enhanced through the use of acoustic phonetic instruments and speech analysis technologies, most notably the computer software Praat, through which intonation can be scientifically identified, measured, and

interpreted in light of acoustic data.

Building upon this foundation, the present study seeks to further explore and define the nature of intonation.

A. Intonation

Classical Arabic dictionaries record the lexical root *n-g-h* (نغم) as part of their entries. In *al-Ṣiḥāḥ* by al-Jawharī (d. 393 AH), it is stated: “*al-naghḥ* refers to a faint sound; it is said: *naghama* / *yanghamu* / *yanghimu* (*naghan*), and ‘so-and-so remained silent without uttering a sound (*fa-mā naghama bi-harf*), and so-and-so is of pleasant *naghma* when his voice is beautiful in recitation” (al-Jawharī, n.d., p. 2/191). The same meaning is found in Ibn Manẓūr (d. 711 AH), who defines it as “the resonance of a word and the beauty of the voice in recitation and other contexts; *al-naghḥ* also denotes a faint sound, and *al-naghma* refers to pleasant speech; it is said: so-and-so remained silent without uttering a sound” (Ibn Manẓūr, n.d., p. 14/312).

The term *naghḥ* thus carries several meanings, including the resonance of words that produces an acoustic effect intended to convey meanings that ordinary lexical items may fail to express, as well as the beauty of voice in recitation and the notion of subtle or imperceptible sounds.

In *al-Muʿjam al-Mufaṣṣal*, Ibn Yaʿīsh (d. 643 AH) defines it as “a type of speech music, through which the learner can identify many properties of discourse, such as distinguishing between declarative and interrogative sentences, especially when no specific grammatical markers exist to perform this distinction, as in exclamatory and interrogative expressions” (Yaʿqūb & ʿĀṣī, 1987, p. 1/207). What is notable here is the functional orientation of the definition, as it distinguishes between sentence types from a syntactic perspective, particularly exclamation and interrogation.

In modern linguistic terminology, intonation is defined as “the variation between high and low pitch levels resulting from changes in the rate of vibration of the vocal cords, producing a musical tone” (Sami et al., 2003, p. 67). Thus, tone is produced through differences in pitch height or lowering, corresponding to variations in the number of vocal-fold vibrations, increasing when frequency rises and decreasing when it falls.

B. Among Specialists

When humans speak, they do not use a single constant pitch; rather, their voice typically rises and falls. This phenomenon is known as “speech music,” “melody,” or what is currently referred to as “intonation.” It is a feature present in the Arabic language, which has been recognized by modern linguists as well as noted by early Arab scholars, and this is what this study seeks to clarify.

Daniel Jones Daniel Jones defines intonation as “the variations that occur in the pitch of the voice in connected speech; this variation results from the vibration of the vocal cords” (Al-Sharʿ & Al-Sharout, 2004, p. 3). Terms such as “pitch” and “vibration” indicate that intonation is a vocal performance produced by the speaker for expressive, aesthetic, and semantic purposes determined by context.

Mario Pei Mario Pei defines it as “the sequence of musical tones or rhythmic patterns in a given speech event”

(Mario, 1998, p. 93), meaning that it is a variation in pitch during a specific act of speech.

Ibrahim Anis introduced the term “speech music” into Arabic linguistic studies as an equivalent of the term *intonation*. He argues that when humans speak, they do not maintain a single pitch across all sounds; rather, the sounds within a syllable vary in pitch, and words may also differ in this regard. This sequence of pitch levels can be described as a musical contour (Ibrahim, 1979, p. 103). Through this, he highlights variation in vocal performance at both word and sentence levels, which leads to multiple intonational patterns.

Rashad Al-Hamzawi holds that intonation is “the phonetic term that denotes the rise (ascending) and fall (descending) in the degree of loudness in speech” (Rashad, 1987, pp. 188–189). This definition highlights the fundamental components of intonation, namely variations in vocal intensity between rise and fall.

Kamal Bishr describes it by stating that “speech tones are always in a state of change from one performance to another, from one situation to another, and from one psychological state to another. The possibilities of variation in speech give it meaning; it reflects the speaker’s psychological state, and it is also an important factor in clarifying and interpreting meanings and distinguishing between different speech patterns” (Bishr, 2000, p. 534). Thus, intonation functions as a kind of speech music that changes according to psychological states and communicative purposes, relying on variations in frequency and acoustic waves manifested in rises and falls in pitch, which in turn influence syntactic, morphological, and rhetorical structures and their meanings.

In this regard, Tammam Hassan emphasizes its functional dimension, stating that intonation can be defined as the rise and fall of the voice during speech. He suggests that it may have a grammatical function in distinguishing between affirmation and negation in sentences that lack interrogative particles. For example, one may say to someone without seeing them: “Are you Muhammad?” either as a statement or as a question, and the manner of raising or lowering the voice differs between affirmation and interrogation. He also refers to it elsewhere as “the phonetic framework in which a sentence is uttered in context” (Tammam, 1990, pp. 164–198). He explicitly notes that his study is based on dialectal usage and employs a categorical negation of the existence of intonation as a fully established phenomenon in the Arabic linguistic tradition, stating: “Intonation in the Arabic language is neither impossible nor fully studied; therefore, our present study of it necessarily relies on pronunciation habits in colloquial dialects” (Tammam, 1985, p. 228).

Early Arab scholars were attentive to the phenomenon of pitch rise and fall in modes of speech production and articulation, as well as to the melodic patterns it produces and their effect on the listener, while remaining governed by rules that ensure correct pronunciation. They also exploited these features to eliminate ambiguity and to achieve rhythmic harmony in speech duration and length. Thus, early Arabs practiced intonation in its various forms, and Qurʾanic reciters were particularly well-versed in it; however, they did not conceptualize it as a technical term.

In *Al-Khaṣā'is*, Ibn Jinnī (d. 392 AH) provides evidence of his awareness of intonational phenomena when he states: "When you are praising someone and speaking well of him, you may say: 'By God, he was a man...' and you increase the strength of pronunciation in invoking God in this expression, extending the articulation of the lām and prolonging the sound, such as saying: a virtuous, noble, or generous man, and so on" (Ibn Jinnī, 1999, vol. 2, p. 371). This reflects an early understanding of intonation, as the speaker lengthens the voice by extending the articulation of the lām in "Allāh," employing a rising melodic contour. This phenomenon is inherently tied to spoken language, as the essence of language lies in its vocal realization.

Philosophers were also aware of its role in speech across different contexts. Al-Fārābī (d. 339 AH) classified human melodies into three types: "a type that brings pleasure to the soul, a type that assists the soul in imagination and representation of things, and a type that arises from emotions and states, whether pleasurable or painful" (Al-Fārābī, 1072, pp. 62–63). Similarly, the functions of intonation in the writings of the Brethren of Purity (Ikhwān al-Ṣafā') are not far from Al-Fārābī's view. They state that during supplication and glorification, musical melodies were used—referred to as *al-ḥazīn* (melancholic melodies)—which soften hearts upon hearing them, cause tears to flow, and lead souls to remorse over past sins (Ikhwān al-Ṣafā', 1984, vol. 1, p. 321).

The grammarians did not overlook the relationship between grammar and intonation in explaining certain syntactic issues; rather, they classified sentences according to their prosodic rhythm. Moreover, several phonetic phenomena were employed in grammatical analysis, which will be addressed in detail in the applied section of this study.

This is evident in Sibawayh's (d. 180 AH) treatment of the strengthening of voiced sounds and the weakening of voiceless ones in the chapter on *lamentation* (*al-nadb*), where he states: "Know that the one who is lamented is being addressed, but with an expression of grief. If you wish, you may append an alif at the end of the noun, because lamentation is as though they are chanting in it" (Sibawayh, n.d., p. 1/321).

Thus, early scholars pointed to the effects of intonation and some of its manifestations in speech; however, it was not subjected to a fully systematic study in their works.

C. Intonational Patterns and Their Functions

It is difficult to find any language that uses a single pitch level throughout an entire sentence, since every spoken utterance necessarily involves different pitch movements. On this basis, scholars have contributed to identifying intonational patterns associated with sentence structures and their syntactic meanings in their spoken form, ranging between high pitch, low pitch, and level pitch, as follows (Ibrahim, 1979, pp. 534–535):

1. Falling Intonation:

It is called so because of its descending movement at the end, despite possible internal pitch variations. It typically begins with a rising tone followed by a falling one, as in declarative sentences.

2. Rising Intonation:

It is characterized by a rising movement at the end. It usually begins with a falling tone followed by a rising one, as in interrogative sentences.

Kamal Bishr limited the main intonational patterns to two types, based only on their final contour rather than internal variations within the utterance.

In addition to these two basic patterns, there are other intonational forms (Al-Barakawi, 2004, pp. 197–198):

3. Level Intonation:

It is characterized by a relatively stable pitch without significant rise or fall, producing a sense of continuity in speech.

4. Rising–Falling Intonation:

The utterance begins with a fall, followed by a rise and then a final fall in pitch. This pattern often indicates emphasis or confirmation.

5. Falling–Rising Intonation:

The utterance begins with a rise followed by a fall, and it may convey meanings such as possibility or uncertainty.

From this, it becomes clear that sentence variation is closely related to pitch movement: the two primary patterns (rising and falling), along with level, rising–falling, and falling–rising contours, constitute the main intonational systems governing Arabic speech.

D. Functions of Intonation

Intonation performs a variety of functions in linguistic analysis, which differ from one language to another. Some languages rely on pitch level as a lexical determinant of meaning; in such cases, a high pitch may yield a different lexical meaning from a low or mid pitch. Languages that depend on this feature are known as tonal languages. Conversely, other languages do not use pitch level to distinguish lexical meaning (Al-Barakawi, 2004, p. 198).

Beyond lexical distinctions, intonation may serve rhetorical or syntactic functions, and its most important role appears to be grammatical. It distinguishes between sentence types (declarative vs. interrogative) and their various communicative purposes. It also reflects psychological and emotional states such as sadness, anger, surprise, and joy. Examples of such languages include Arabic, English, and German. In Arabic, for instance, the sentence "Tomorrow is Saturday" may function as a statement, a question, an exclamation, or a warning depending on its intonational pattern: a rising tone typically indicates interrogation, a falling tone indicates declaration, a fall–rise contour expresses possibility, and a level tone indicates continuity.

Thus, intonation is a fundamental factor in determining whether a spoken utterance is complete in both structure and meaning. This is clearly observed in conditional sentences, where a rising tone signals incompleteness, while completion is achieved in the apodosis, which ends with a falling tone indicating full structural and semantic closure (Bishr, 2000, p. 541). While punctuation marks perform this function in writing, intonation fulfills it in spoken discourse. Therefore, in spoken language, meaning cannot be fully determined except through intonation, which protects speech from ambiguity. Syntactic meaning primarily reflects intonational contours, whereas stress (*nabr*) is more closely

related to word-level distinctions, since intonation operates at the level of sentence structure while stress operates at the level of individual words.

In this regard, the main functions of intonation can be summarized as follows:

E. Syntactic Function

This is considered the primary function of intonation. It aims at distinguishing between sentence types and clarifying their grammatical roles, along with the meanings associated with them. It is most evident in interrogative structures, where it helps determine affirmation or negation in sentences that lack an explicit interrogative particle. In some cases, this function may override the role of certain grammatical markers and alter the course of the utterance.

Kamal Bishr states that “the syntactic function is the primary function of intonation, as it is the active factor in distinguishing between syntactic patterns and differentiating their grammatical categories, thereby enabling the researcher to carry out a precise scientific analysis of linguistic data and its actual modes of realization” (Bishr, 2000, p. 541). If intonation distinguishes syntactic meanings in this way, it is also actively involved in performing this role.

F. Psychological Function

Intonation reflects the speaker’s emotional and psychological state, whether they are in a good or bad condition, and whether they feel happiness, sadness, or

astonishment. Intonation “adds a vibrant atmosphere to dialogue by expressing complete meanings and embodying the speaker’s emotions, impressions, and the tension or excitement accompanying their linguistic behavior. In contrast, written texts lack these features because they are devoid of intonation; written discourse is, to some extent, ‘mute,’ as it presents information stripped of the emotional and psychological context of both speaker and listener” (Farhad, 2014, p. 8).

G. Semantic Function

This function concerns the differentiation of meaning, as the meaning of a word may change depending on its intonational contour. A word pronounced with one intonational pattern carries a certain meaning, while a different pattern may produce a different meaning altogether.

H. Expressive (or Emotional) Function

This function expresses the various emotional and affective states of the speaker, such as joy, anger, surprise, or contemplation. It is more closely related to the speaker than to the linguistic system itself.

XXVI. INTONATIONAL PATTERNS AND THEIR FUNCTIONS IN QUDSI HADITHS (LABORATORY–PHONOLOGICAL APPROACH)

A. Analysis of the Intonational Contour.

B. First Model:

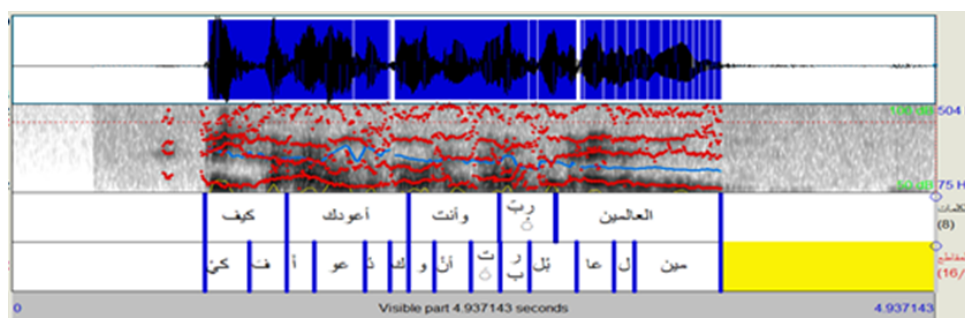


Fig. 1. represents the waveform and spectrogram of the sentence: “How can I visit You while You are the Lord of the Worlds?”

C. Intonational Contour Analysis

This interrogative sentence—“How can I visit You while You are the Lord of the Worlds?” (Metwally, 2002, p. 1/59)—is represented in Figure 1, which shows both the waveform and spectrogram of the utterance. It is introduced by the interrogative particle “*kayfa*” (how), which is associated with specific acoustic co-occurrences that become visible through the intonational contour.

From the spectrographic analysis, we observe that the fundamental frequency (F0) at the beginning of the utterance is approximately **288.64 Hz**, then rises slightly to **301.25 Hz**, indicating a rising intonational pattern in the interrogative segment “*kayfa a‘ūduka*” (“how can I visit You”).

The contour then shifts with the clause “*wa-anta rabbu al-‘ālamīn*” (“while You are the Lord of the Worlds”), where a gradual decline begins. The pitch decreases to **241.23 Hz**, followed by a slight rise to **250.23 Hz**, before continuing to fall to **226.76 Hz** and finally **198.24 Hz**, reflecting a clearly falling intonational pattern.

Thus, the acoustic framework of the sentence shows that the segment “*kayfa a‘ūduka*” is characterized by a rising contour, while the second segment “*wa-anta rabbu al-‘ālamīn*” is marked by a progressive decline toward the end, resulting in an overall falling intonation in the final part of the utterance.

D. Second Model:

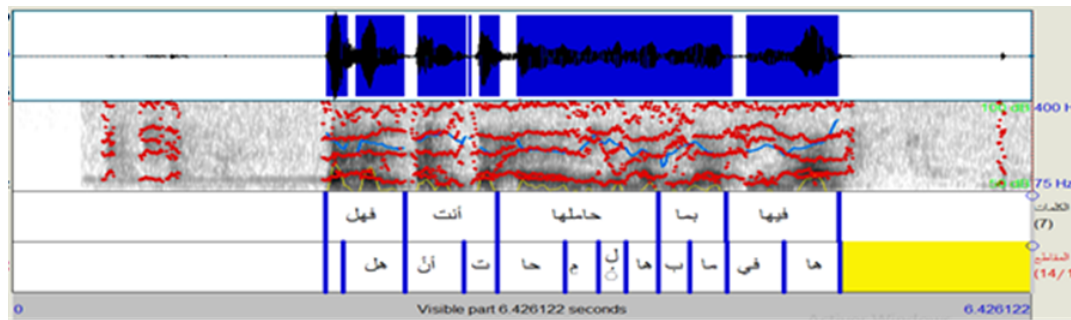


Fig. 2. represents the waveform and spectrogram analysis of the sentence: “Are you carrying it with what it contains?”

E. Intonational Contour Analysis

This interrogative sentence—“Are you carrying it with what it contains?” (Metwally, 2002, p. 1/267)—is represented in Figure 2, which provides a waveform and spectrogram analysis of the utterance “*fa-hal anta ḥāmiluhā bimā fihā*”. It is an interrogative structure introduced by the particle “*hal*”, which is associated with specific acoustic co-occurrences that are reflected in the intonational contour.

From the spectrographic analysis, we observe that the fundamental frequency (F0) at the beginning of the utterance is approximately **282.73 Hz**, then decreases slightly to **260.26 Hz**, before rising again to **286.36 Hz**. The contour then shows a relatively stable phase with values around

259.13 Hz, **255 Hz**, and **241.2 Hz**, before rising sharply at the end to **329.25 Hz**. This overall pattern reflects a **rising intonational contour**, as the sentence begins with a high pitch, decreases slightly, then rises again, followed by a partial fall and a final strong rise.

Thus, the acoustic realization of the utterance shows that the segment “*fa-hal anta*” is initially characterized by a rising tone, while the clause “*ḥāmiluhā bimā fihā*” undergoes a falling movement followed by a final rise, resulting in an intonational pattern that ends with a rising contour.

F. Third Model:

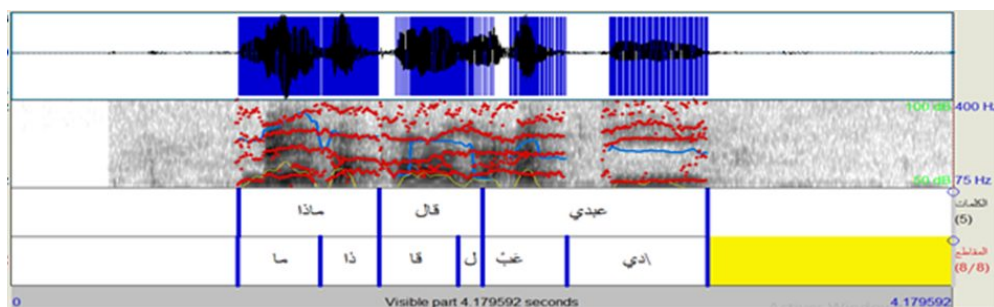


Fig. 3. represents the waveform and spectrogram analysis of the sentence: “What did My servant say?”

G. Intonational Contour Analysis

This interrogative sentence—“What did My servant say?” (Metwally, 2002, p. 2/281)—is represented in Figure 3, which shows the waveform and spectrogram of the utterance “*mādhā qāla ‘abdī*”. This structure is introduced by the interrogative particle “*mādhā*”, which is associated with specific acoustic co-occurrences reflected in the intonational contour.

From the acoustic analysis, we observe that the fundamental frequency (F0) at the beginning of the utterance

is approximately **352.59 Hz**, then decreases to **249.91 Hz**, and continues to fall to **231.66 Hz**. This pattern indicates a **falling intonational contour**, as the sentence begins with a relatively high pitch and gradually descends throughout the remainder of the utterance.

Thus, the acoustic realization of the sentence “*mādhā qāla ‘abdī*” is characterized at its onset by a high pitch, followed by a steady and progressive decline, resulting in an overall falling intonation pattern.

H. Fourth Model:

I. Intonational Contour Analysis

This interrogative sentence—“Did you think that you would meet this Day of yours?” (Metwally, 2002, p. 1/221)—is represented in Figure 4, which provides a spectrographic representation of the utterance “*kuntu tazunnu annaka mulāqī yawmak hādhā*”. It is an interrogative structure introduced implicitly by the

interrogative hamza, and it is associated with specific acoustic co-occurrences reflected in the intonational contour.

From the acoustic analysis, we observe that the fundamental frequency (F0) at the beginning of the utterance is approximately **382.37 Hz**, then decreases significantly to **287.8 Hz**, followed by a continued decline to **280.92 Hz**.

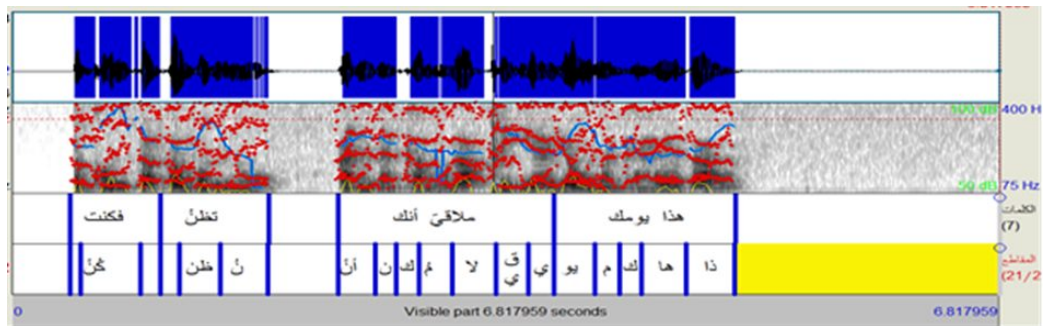


Fig. 4. represents the waveform and spectrogram analysis of the sentence: “You used to think that you would meet this Day of yours.”

and **227.99 Hz**. The contour then rises to **310.5 Hz** and **328.18 Hz**, drops again to **219.17 Hz**, and finally rises once more to **321.61 Hz** at the end of the utterance. This pattern reflects a **falling–rising intonational contour**, as the sentence begins with a high pitch, undergoes a decline, then rises again, falls, and ends with a final rise.

Thus, the acoustic realization of the sentence “*kuntu tazunnu annaka mulāqī yawmak hādhā*” shows a complex intonational movement characterized by an initial high pitch, a gradual fall, followed by alternating rises and falls, and ultimately a rising terminal contour.

J. Fifth Model:

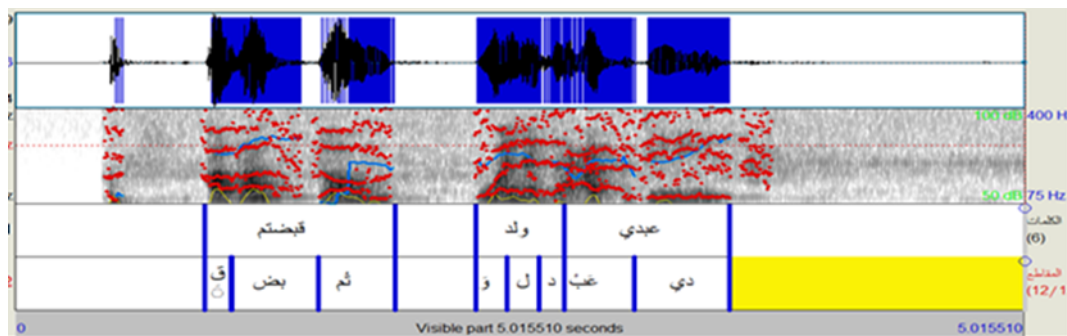


Fig. 5. represents the waveform and spectrogram analysis of the sentence: “You have captured the son of My servant.”

K. Intonational Contour Analysis

This interrogative sentence—“Have you taken away the son of My servant?” (Metwally, 2002, p. 2/281)—is represented in Figure 5, which shows the waveform and spectrogram of the utterance “*qabaḍtum walada ‘abdi*”. It is an interrogative structure without an explicit particle, relying on prosodic realization to convey interrogative meaning, and it is associated with specific acoustic co-occurrences reflected in the intonational contour.

From the acoustic analysis, we observe that the fundamental frequency (F0) at the beginning of the utterance

is approximately **304.94 Hz**, then decreases to **246.93 Hz**, before rising again to **305.47 Hz** at the end of the sentence. This pattern reflects a **falling–rising intonational contour**, as the utterance begins with a relatively high pitch, undergoes a decline in the middle, and ends with a clear rise.

Thus, the acoustic realization of the sentence “*qabaḍtum walada ‘abdi*” is characterized by an initial high pitch, followed by a downward movement, and a final rising contour that marks the interrogative prosodic pattern.

L. Sixth Model:

by the observation that a comma (,) corresponds to the end of the first part of the conditional structure, while a full stop (.) marks the end of the second part, indicating complete utterance realization in both form and meaning (Bishr, 2000, pp. 541–542).

Accordingly, the present model analyzes a conditional structure:

The sentence—“Whoever shows enmity to My close servant, I declare war against him” (Metwally, 2002, p. 1/87)—is represented in Figure 6, which shows the waveform and spectrogram of the utterance “*man ‘ādā lī walīyan fa-qad ādhantuhu bil-ḥarb*”. It is a conditional

M. Intonational Contour Analysis

N. Conditional Sentence (Protasis and Apodosis)

Intonation, with its varied patterns, is considered a fundamental factor in determining whether an utterance is complete in structure and meaning or incomplete. This is clearly observed in conditional sentences, where the protasis ends with a rising intonational contour, indicating that the utterance is not yet complete, while completion is achieved in the apodosis, which ends with a falling contour, signaling full structural and semantic closure. In this sense, intonation performs a function analogous to punctuation marks in writing (Bishr, 2000, pp. 541–542). This is further supported

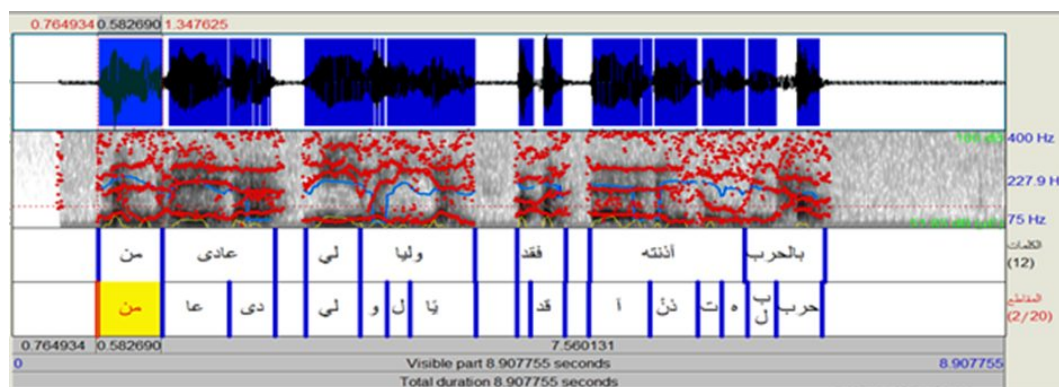


Fig. 6. represents the waveform and spectrogram analysis of the sentence: “Whoever shows enmity to My close servant, I declare war against him.”

construction consisting of a protasis and an apodosis, and it is associated with specific acoustic co-occurrences reflected in the intonational contour.

From the acoustic analysis, we observe that the fundamental frequency (F0) begins at approximately **249.78 Hz**, then gradually decreases through **231.38 Hz**, **232.98 Hz**, **213.08 Hz**, **225.3 Hz**, and **220.14 Hz**, reaching a minimum value of **199.05 Hz**. This pattern reflects a generally **falling intonational contour**, as the utterance starts with a

relatively high pitch and progressively declines across the sentence, with minor fluctuations.

Thus, the acoustic realization of the sentence “*man ‘ādā lī waliyan fa-qad ādhantuhu bil-ḥarb*” shows an overall descending contour characterized by an initial higher pitch followed by a gradual fall, reflecting the prosodic completion of the conditional structure.

O. Seventh Model:

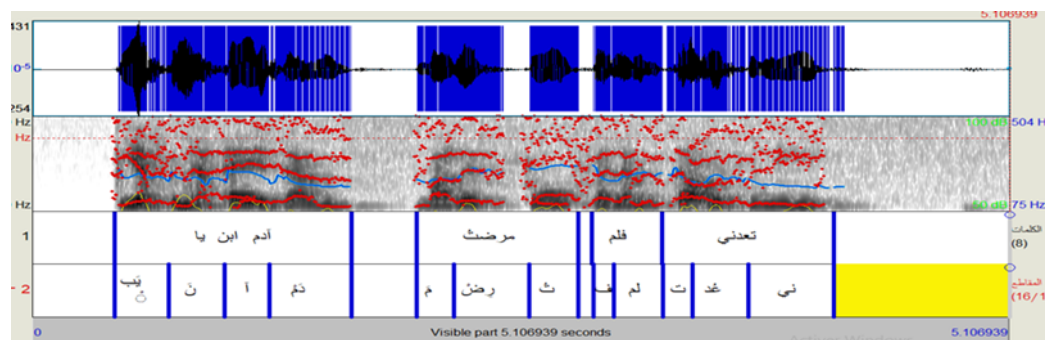


Fig. 7. represents the waveform and spectrogram analysis of the sentence: “O son of Adam, I fell ill and you did not visit Me.”

P. Intonational Contour Analysis

The sentence “O son of Adam, I fell ill and you did not visit Me” (Metwally, 2002, p. 2/59) is represented in Figure 7. It is a vocative structure (*nidāʾ*) associated with specific acoustic co-occurrences that are reflected in the intonational contour.

From the acoustic analysis, we observe that the fundamental frequency (F0) at the beginning of the utterance is approximately **265.63 Hz**, then decreases slightly across the following segments to **255.57 Hz** and **239.6 Hz**. It then rises to **268.88 Hz**, followed by a drop to **252.55 Hz**, and continues descending to **221.82 Hz**. Afterwards, it rises again to **288.64 Hz** and **301.25 Hz**, then declines through

241.23 Hz, **250.23 Hz**, and **226.76 Hz**, finally reaching a lower value of **198.24 Hz**.

This complex pattern reflects a **multi-directional intonational contour**, characterized by successive rises and falls. The utterance begins with a relatively high pitch, followed by a gradual decline, then a rise, another fall, a further rise, and a final descent at the end of the sentence.

Thus, the acoustic realization of the sentence “*yā ibna ‘ādam maridtu fa-lam ta‘udnī*” exhibits a dynamic and fluctuating intonational pattern, reflecting the emotional and expressive nature of the vocative structure.

Q. Eighth Model:

R. Intonational Contour Analysis

The sentence “O mankind, fasting has been prescribed for you” (Metwally, 2002, p. 2/307) is represented in Figure 8. It is a vocative construction associated with specific

acoustic co-occurrences that are reflected in the intonational contour.

From the acoustic analysis, we observe that the fundamental frequency (F0) at the beginning of the utterance is approximately **264.68 Hz**, then rises slightly to **289.02**

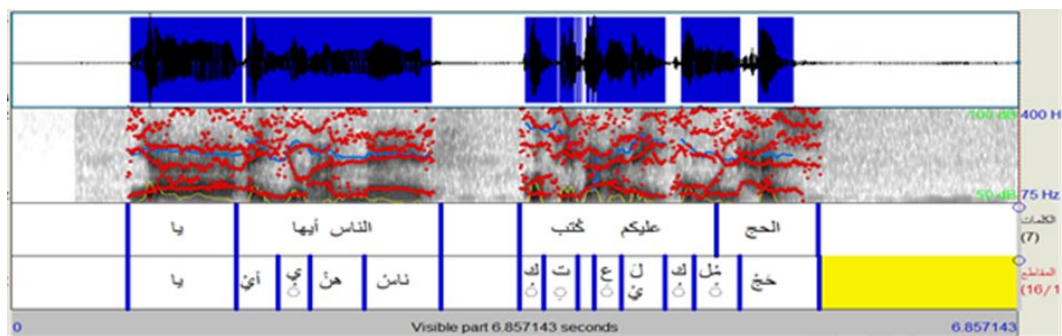


Fig. 8. represents the waveform and spectrogram analysis of the sentence: “O mankind, fasting has been prescribed for you.”

Hz, followed by a decrease to **244.55 Hz**. It then rises again to **348.6 Hz** and **304.78 Hz**, before falling at the end of the utterance to **250.83 Hz**.

This pattern reflects a **rising–falling intonational contour with internal fluctuations**, where the vocative segment “*yā ayyuhā al-nās*” begins with a relatively high pitch and shows a rising movement followed by a slight fall, while the imperative-like clause “*kutiba ‘alaykum al-ḥajj*”

starts with a very high pitch and gradually declines, indicating a falling contour toward the end of the sentence.

Thus, the acoustic realization of the utterance demonstrates a combination of rising and falling movements, reflecting both the vocative and directive functions of the sentence.

S. Ninth Model:

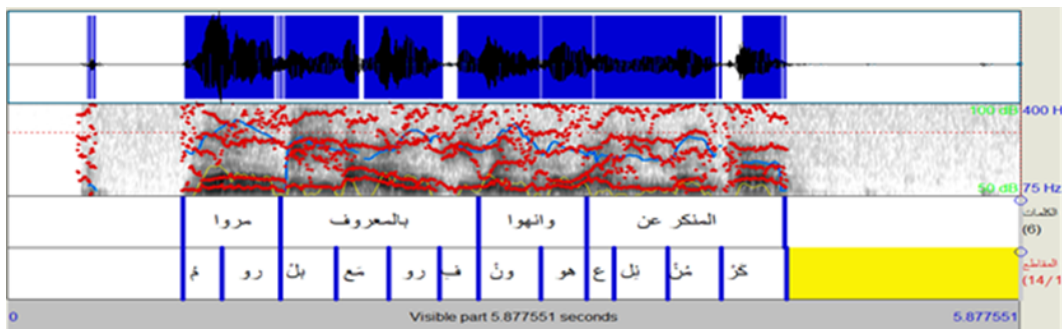


Fig. 9. represents the waveform and spectrogram analysis of the sentence: “Enjoin what is good and forbid what is wrong.”

T. Intonational Contour Analysis

The sentence “*Enjoin what is good and forbid what is wrong*” (Metwally, 2002, p. 1/177) is represented in Figure 9. It is an imperative structure associated with specific acoustic co-occurrences that are reflected in the intonational contour.

From the acoustic analysis, we observe that the fundamental frequency (F0) at the beginning of the utterance is relatively high at approximately **343.06 Hz**, then decreases to **280.02 Hz**, before rising again to **328.7 Hz**, and finally declining gradually to **218.77 Hz** and **195.92 Hz**.

This pattern reflects an **alternating rising and falling intonational contour**, where the utterance begins with a high pitch, followed by a fall, then a rise, and finally a steady decline toward the end of the sentence.

Thus, the acoustic realization of the sentence “*murū bil-ma’rūf wa-anhaw ‘ani l-munkar*” exhibits a dynamic intonational movement characterized by successive pitch variations that reflect the directive and imperative force of the utterance.

U. Phonological Analysis of the Intonational Contour

Model 1: Phonological Analysis of the Sentence “How can I visit You while You are the Lord of the Worlds”

No one is more eloquent or truthful than God; His speech, Glory be to Him, represents the highest degree of eloquence and clarity.

The sentence “*kayfa a ‘ūduka wa-anta rabbu al-‘ālamīn*” is an interrogative structure introduced by the particle “*kayfa*”, which is a non-adverbial interrogative pronoun used to inquire about manner, as stated by Sibawayh (n.d., p. 1/278). It may extend beyond its basic interrogative meaning to express other functions such as reproach, astonishment, exaggeration, negation, or denial.

In this context, as confirmed through the instrumental analysis, the sentence carries a **rising intonation** in the segment “*kayfa a ‘ūduka*” and a **falling intonation** in “*wa-anta rabbu al-‘ālamīn*”. The pitch rises as the speaker’s breath becomes filled with astonishment and confusion, since interrogation arises from something beyond expectation, thereby stimulating the listener and engaging both heart and intellect.

A close examination of the sentence reveals that it carries two layers of meaning: a genuine interrogative meaning and a figurative one. The literal interrogative sense refers to seeking knowledge of what is unknown, as illustrated in the divine response “a servant of Mine has fallen ill,” while the figurative meaning expresses astonishment at the idea of God being visited by His servant despite His absolute sovereignty as the Lord of the Worlds. Thus, the prosodic realization of interrogation aligns with the speaker’s emotional state of wonder, where acoustic variation reflects psychological intensity and communicative effect.

V. Model 2: Phonological Analysis of the Sentence
“Are you carrying it with what it contains?”

The particle “*hal*” is an interrogative marker. According to Sibawayh (d. 180 AH), it originates from “*ahl*” with a meaning close to “indeed,” but its usage was restricted after the initial alif was dropped, as it occurs exclusively in interrogative contexts (Sibawayh, n.d., p. 3/198). Sibawayh likens “*hal*” to “*qad*”, though not in the sense commonly assumed by many scholars, since it remains firmly within the domain of interrogation. Ibn Jinnī also confirmed this classification (Ibn Jinnī, 1999, p. 2/464). It is used to request confirmation of nominal or verbal propositions and is primarily associated with seeking affirmation (al-Sakkākī, 1987, p. 308), and the expected answer is “yes” or “no.”

In the narrative context, Adam did not initially respond with “yes” or “no” because he was unaware of the burden of the trust. Instead, he responded with a question, “What is in it for me?”, and when informed of its consequences—reward for bearing it and punishment for neglecting it—he accepted it, being described as “ever unjust and ignorant” (Qur’an, 33:72). His final acknowledgment is equivalent to a “yes.”

Thus, the issue relates to human free will: acceptance or refusal depends on choice, and the trust is a heavy responsibility borne only by those strong in faith and longing for Paradise. As noted, “most people are unable to control themselves at the moment of responsibility, and may thus fall into injustice or ignorance of their condition” (Metwally, 2002, pp. 1/267–268).

A close reading of the sentence reveals two layers of meaning: a literal interrogative meaning and a figurative one. The figurative dimension applies to God, who already knows the states of people; His questioning serves a pedagogical and cautionary purpose. The literal dimension applies to human understanding, which seeks to comprehend the weight of the trust.

W. Model 3: Phonological Analysis of the Sentence
“What did My servant say?”

The sentence “*mādhā qāla ‘abdī*” is an interrogative structure introduced by the particle “*mādhā*”, which results from the combination of “*mā*” and “*dhā*”. It is a relative form that may function as “that which” or may also appear as an indefinite form meaning “something” (al-Astarābādī al-Raḍī, 1966, pp. 3/49–53). According to Sibawayh, “*mā*” is used to inquire about everything, as he states: “*mā* is ambiguous and applies to all things” (Sibawayh, n.d., p. 4/328).

In this context, the Divine interrogation directed to the angels is primarily figurative, serving as a form of admonition and testimony. This prosodic variation, within the broader contextual framework, functions as a witness to the state of the afflicted servant—whether patient and anticipating reward or lacking patience and certainty in faith. At the same time, it may also be understood in a literal sense, as it expresses the angels’ reporting of the servant’s actions.

Model 4: Phonological Analysis of the Sentence
“You used to think that you would meet this Day of yours”

Many grammarians have allowed the omission of the interrogative hamza, provided that a contextual indicator exists to signal its implied presence (al-Zarkashī, n.d., p. 111; al-Zamakhsharī, 2004, p. 326). For example, in the Qur’anic verse “*This is my Lord*” (Al-An‘ām: 78), many scholars interpret it as an implicit interrogative: “*Is this my Lord?*”

Similarly, although the interrogative particle is omitted in the sentence “*kuntu taẓunnu annaka mulāqī yawmak hādihā*”, the listener is still able to perceive its interrogative force through context, especially in spoken form, and through prosodic features when uttered aloud.

At first glance, the sentence appears declarative; however, its contextual embedding allows it to be interpreted as interrogative in intonational terms. Classical scholars have emphasized that the hamza is the primary interrogative marker, and its omission is considered a form of phonetic economy, with no other element replacing its function in full (Ibn Jinnī, 1971, p. 2/205). Some grammarians also permit its omission when ambiguity is absent (al-Anṣārī, n.d., p. 1/15).

The interrogative meaning is maintained through contextual clues, including the expected negative response (“no”), which ensures the preservation of meaning. In this instance, the interrogative function carries a tone of reproach and sarcasm directed at those who forget God, as worldly arrogance may lead individuals to believe they are permanently protected: “*and they thought that their fortresses would protect them from God*” (Al-Hashr: 2). Thus, they reach a state in which they do not anticipate meeting God.

X. Model 5: Phonological Analysis of the Sentence
“Did you take the child of My servant?”

In the sentence “*qabadtum walada ‘abdī*”, the form “*qabadtum*” is interpreted as having an omitted interrogative element, originally understood as “*a-qabadtum*” (“Did you take...?”). This follows the grammatical principle that omission is permissible when a contextual indicator is present, allowing the interrogative meaning to remain intact. In this case, the contextual cue is found in the prophetic narration: “*they will say: yes.*”

Islamic doctrine is founded on two essential principles: patience and gratitude—gratitude for divine blessings and patience in adversity. This balance underlies the believer’s response to trials, as God loves the patient (“*Indeed, God loves the patient*”, Qur’an 3:146). Trials are a divine law through which God distinguishes between sincere and insincere servants. Among the blessings of worldly life are

children, who represent joy, comfort, and emotional attachment; thus, their loss constitutes one of the most severe forms of trial.

Accordingly, the interrogative structure in “*Did you take the child of My servant?*” serves to emphasize the severity of the affliction experienced by the servant. This is reinforced by the subsequent question “*Did you take the fruit of his heart?*”, highlighting the profound emotional weight of losing one’s child.

Y. Model 6: Phonological Analysis of the Sentence
 “Whoever shows hostility to My close servant...”

The conditional structure “*man ‘ādā lī waliyyan fa-qad ādhantuhu bi-l-ḥarb*” consists of two main parts: a protasis (condition clause) introduced by the conditional particle and its verb, and an apodosis (result clause) which completes the meaning. The second clause constitutes the completion of both form and meaning. The linkage between the two clauses is achieved through the particle “*fa*”, which connects the result to the condition.

As noted by Kamel Bishr, classical Arabic grammarians recognized this syntactic dependency and marked it through the obligatory use of “*fa*” in the apodosis of conditional sentences (Bishr, 2000, p. 542). This linking particle functions similarly to punctuation in writing, indicating cohesion between the two parts of the sentence.

The first clause “*man ‘ādā lī waliyyan*” expresses the condition, while the second “*fa-qad ādhantuhu bi-l-ḥarb*” expresses the consequence, namely divine declaration of hostility toward anyone who opposes a believer for his faith. This emphasizes the seriousness of harming the righteous and the spiritual consequences of such actions.

Model 7: Phonological Analysis of the Sentence “O son of Adam, I was ill and you did not visit Me”

The vocative structure inherently involves a rise in vocal intensity, reflecting an internal emotional state that is manifested through intonational patterns. In grammatical tradition, vocative expressions are defined as forms used to draw attention and emotionally engage the addressee (Ibn Ya‘īsh, n.d., p. 8/120). It is one of the most acoustically salient structures in Arabic due to its expressive and pragmatic richness. The particle “*yā*” produces an open vocal onset, allowing unrestricted airflow, which contributes to its acoustic prominence.

Classical scholars, including Sibawayh, noted that vocative structures may extend beyond their basic function to express meanings such as lamentation, supplication, astonishment, or even reproach (Sibawayh, n.d., pp. 2/215–218).

In this context, the expression “*yā ibn Ādam maridtu fa-lam ta‘udnī*” requires interpretive caution, as attributing illness to God is metaphorical and must be understood through theological interpretation. The intended meaning is not literal, but rather symbolic, emphasizing divine care and the servant’s neglect of duties such as visiting the sick.

The vocative here functions as a call for compassion and moral awareness. It reflects the idea that divine mercy encompasses human experience, and that the believer is urged to respond to suffering with empathy and action.

Z. Model 8: Phonological Analysis of the Sentence
 “O people, fasting has been prescribed for you”

Fasting is one of the major obligations and a fundamental pillar of Islam, upon which the religion is established and without which it is not valid when conditions are met. The sentence combines both **vocative and declarative/imperative dimensions**: the vocative function is indicated by the particle “*yā*”, while the notion of obligation is expressed through the verb “*kutiba*” (“has been prescribed”).

In this case, intonation interacts with context to position the sentence within its appropriate acoustic and functional framework. The apparent surface structure begins as a vocative construction, while the following clause appears declarative; however, its deeper semantic force conveys obligation and directive meaning through context.

The imperative, as the opposite of prohibition, is defined as a linguistic form that seeks to bring about an action through a directive force characterized by superiority (al-‘Alawī, 1964, pp. 3/281–282). Its temporal orientation is future-oriented, since it concerns actions that have not yet occurred. Imperatives may be explicit or implicit. Ibn Ḥazm (d. 459 AH) states that obligations may appear either in the form of an explicit command (*if‘al*) or in declarative structures that carry imperative meaning (Ibn Ḥazm, n.d., p. 3/32). In this sentence, the command is expressed implicitly through the passive form “*kutiba ‘alaykum al-ḥajj*”.

Reciting the sentence with an imperative intonational pattern differs significantly from reading it as a purely declarative statement. God addresses the believers and commands them to perform pilgrimage, making it a duty that requires reflection and prompt action from every capable Muslim. The emphasis lies on fulfilling this obligation without delay once the conditions are met.

AA. Model 9: Phonological Analysis of the Sentence
 “Enjoin what is right and forbid what is wrong”

God has clarified in the Qur‘an the proper conduct toward those who commit wrongdoing, and the Prophet’s Sunnah further elaborates this principle. Numerous textual evidences emphasize the importance of enjoining good and forbidding evil as a defining characteristic of the Muslim community. If this principle is abandoned, the moral integrity of the community is undermined.

The sentence “*murū bil-ma‘rūf wa-nhaw ‘ani al-munkar*” contains two imperative verbs, “*murū*” and “*nhaw*”, which represent the canonical imperative form (*if‘al*) in Arabic. This form is primarily addressed to the second person and is the most common and direct way of expressing obligation or instruction.

The semantic force of these verbs reflects obligation, honor, and adherence to divine command. However, their pragmatic function extends beyond command to include advice, guidance, and moral instruction. Intonationally, the imperative carries a prosodic load that conveys reform and social benefit. It serves as a mechanism for maintaining moral order within society, which is inherently diverse in levels of obedience and disobedience to God.

XXVII. CONCLUSION

XXVIII. RESULTS OF THE INTONATIONAL CONTOUR STUDY

- The acoustic contour of the sentence “*kayfa a‘ūduka*” begins with a rising tone, while “*wa-anta rabbu al-‘ālamīn*” is characterized by a falling tone.
- The contour of “*fa-hal anta*” begins with a rising movement, while “*hāmiluhā bimā fihā*” shows a falling pattern followed by a final rise.
- The utterance “*mādhā qāla ‘abdi*” starts with a high pitch and then exhibits a gradual falling contour.
- The sentence “*fa-kunta tazunnu annaka mulāqī yawmak hādhā*” begins with a high pitch, then gradually falls, and finally rises again toward the end.
- The contour of “*qabadtum walada ‘abdi*” starts high, falls progressively, and then rises again at the end.
- The sentence “*man ‘ādā lī waliyyan fa-qad ādhantuhu bi-l-ḥarb*” begins with a high pitch, followed by a fall, then a rise, and finally another fall.
- The utterance “*yā ibn Ādam maridtu fa-lam ta‘udnī*” shows multiple fluctuations: rising, falling, repeated alternations, and a final gradual descent.
- The vocative “*yā ayyuhā al-nās*” begins with a high pitch followed by a rise, then a slight fall, while the clause “*kutiba ‘alaykum al-ḥajj*” starts very high and then declines gradually.
- The imperative “*murū bil-ma‘rūf wa-nhaw ‘ani al-munkar*” shows a rise–fall–rise–fall pattern.

A. General Observations on Sentence Types and Intonation

- Interrogative sentences with particles typically show rising–falling patterns, while interrogatives without particles tend to show falling–rising contours.
- Vocative structures are characterized by complex contours, often combining rising and falling movements.
- Explicit imperatives tend to display falling–rising–falling patterns, while implicit imperatives show predominantly falling contours.
- Declarative sentences are generally marked by a falling or gradually level contour.
- Jussive constructions tend to exhibit falling patterns with occasional fluctuations.
- Emphatic structures typically show a falling–rising–falling contour.

B. Final Conclusion

The findings confirm the validity of the hypothesis that intonational patterns vary according to sentence type, and that Arabic utterances exhibit rising, falling, and level contours depending on their syntactic and pragmatic functions.

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